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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/732,282	12/07/2000	John Michael Miller	200-0459	9416

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EXAMINER

CORRIGAN, JAIME W

ART UNIT PAPER NUMBER

3748

DATE MAILED: 07/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/732,282

Applicant(s)

MILLER, JOHN MICHAEL

Examiner

Jaime W Corrigan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16, 22-26, 35 and 36 is/are pending in the application.
- 4a) Of the above claim(s) 17, 18 and 27-34 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24, 25 and 35 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 13-16, 22, 23, 26 and 36 is/are rejected.
- 7) ☒ Claim(s) 3 and 5-12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the Amendment and Notice of Appeal filed on 7-18-02. Claim 26 has been amended. Claims 17-18, 27-34 have been cancelled. Claims 19-21 are Non-elected. Overall, claims 1-16, 22-26, 35-36 are pending in this application. The arguments contained therein were deemed persuasive in part. Accordingly, a new non-final rejection is set forth below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 15, 22-23, 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Schroeder (PN 5,598,814).

Regarding claims 1, 15, 23 Schroeder discloses an engine block having a cylinder disposed therein (See Figure 1); an engine head adjacent to said engine block with an air intake line and an exhaust line (See Figure 1 (14)); a first electromechanical valve assembly (See Figure 1 916)) disposed in said engine head communicating with one of said lines and said cylinder, said valve assembly including:

(a) a first rotor (See Figure 1 (24), Column 4 Lines 20-36) centered about a first axis having a bore (See Figures 1, 2 (Not numbered but clearly visible) extending generally axially therethrough;

(b) a first stator (See Figure 1 (10)) operatively disposed about (See Figure 2) said first rotor for producing a torque (See Column 4 Lines 20-36) to cause rotation of said first rotor about said first axis, and,

(c) a first valve (See Figure 1 (18)) having a first valve stem and a first valve head (See Figure 1 (22)), said first valve stem extending generally axially through said bore of said first rotor (See Figure 1 (21)), said first valve configured to move generally axially responsive to the rotation of said first rotor to control an amount of gases communicating between said line and said cylinder (See Column 4 Lines 17-20).

Regarding claim 22 Schroeder discloses said first direction of rotation of said rotor corresponds to a counterclockwise rotation with respect to said stator (See Column 2 Lines 31-38).

Regarding claim 36 Schroeder discloses opening said valve of said camless (See Figure 1, Column 2 Lines 7-9) valve assembly at a first opening rate (See Column 2 Lines 22-26) to control gas flow into said cylinder during a first combustion cycle of said cylinder; and, opening said valve of said camless valve assembly at a second opening rate (See Column 2 Lines 22-26) to control gas flow into said cylinder during a second combustion cycle of said cylinder.

Claims 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Beblavi (PN 4,452,423).

Regarding claim 13 Beblavi discloses a rotor (See Figure 1A (28), (47)) centered about a first axis having a bore extending generally axially therethrough (See Figure 1A

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(Not numbered but clearly visible), said rotor having a first helical groove (See Figure 1A (Not numbered but clearly visible)); a stator (See Figure 1A (36), (38)) operatively disposed about said rotor for producing a torque to cause rotation of said rotor about said first axis (See Column 3 Lines 23-27), said stator being formed of a plurality of laminated plates (See Figure 3 (36), Column 3 Lines 23-27); a valve having a valve stem (See Figure 1A (49)) and a valve head (See Figure 1A (24)), said valve stem extending generally axially through said bore of said rotor, said valve stem having a second helical groove (See Figure 1A (Not numbered but clearly visible)), said first and second helical grooves forming a raceway between said rotor and said valve stem for holding ball bearings therein (See Column 4 Lines 50-54) and, a plurality of ball bearings disposed within said raceway wherein said valve moves axially responsive to rotation of said rotor (See Column 1 Lines 60-67, Column 2 Lines 1-2) to move said valve head against a valve seat in said engine to prevent gas flow (See Column 1 Lines 11-15) into or out of an engine cylinder.

Regarding claim 14 Beblavi discloses a rotary electric actuator (See Abstract) having a rotatable ballnut (See Figure 1A (47), Column 5 Lines 20-23); and, a valve having a valve stem (See Figure 1A (49)) and a valve head (See Figure 1A (24)), said valve stem operatively connected to said ballnut (See Figure 1A (47), (49)), said valve stem configured to move generally axially responsive to the rotation of said ballnut to selectively engage and disengage said valve head with a valve seat (See Column 5 Lines 24-30) on a cylinder head of said engine.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 4, 16, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schroeder (PN 5,598,814) in view of Beblavi (PN 4,452,423).

Schroeder discloses the invention as recited in claims 1, 15 above, and further discloses an engine cylinder; and, a camless valve assembly (See Figure 1, Column 1 Lines 50-55) having a valve communicating with said engine cylinder (See Figure 1, Column 4 Lines 17-20), said assembly adjusting an opening rate (See Column 2 Lines 22-26) of said valve to control gas flow into said engine cylinder and said valve stem is threadably engaged with said rotor (See Figure 3 (21), (66), (56), (24), (70)).

Schroeder fails to disclose a valve assembly with ball bearings allowing for axial movement of the valve in response to rotation of a rotor.

Beblavi teaches that it is conventional in the art to utilize said rotor (See Figure 1A (28), (47)) includes a first helical groove (See Figure 1A (Not numbered but clearly visible)) and said valve stem includes a second complementary helical groove (See Figure 1A (Not numbered but clearly visible)), said first and second helical grooves forming a first raceway between said rotor and said valve stem, said valve assembly further including ball bearings (See Figure 1 (50), Column 4 Lines 50-54) disposed in

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said first raceway that allow axial movement of said valve (See Column 5 Lines 26-30) responsive to rotation of said rotor.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the valve assembly with ball bearings and helical grooves in the Beblavi device since it would reduce friction in the actuation of the valve.

Allowable Subject Matter

Claims 3, 5-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 24-25, 35 are allowed.

Response to Arguments

Applicant's arguments with respect to claims 1-2, 4, 13-16, 22-26, 28, 35-36 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication from the examiner should be directed to Examiner Jaime Corrigan whose telephone number is (703) 308-2639. The examiner can normally be reached on Monday - Friday from 8:30 a.m. – 6:00 p.m. 2nd Friday off.

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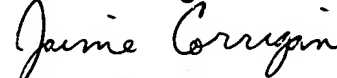
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (703) 308-2623. The fax number for this group is (703) 308-7763.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.

JC

July 25, 2002

Jaime Corrigan



Patent Examiner

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